

In the Claims:

Please amend the claims as follows:

1. (Canceled)

2. (Currently Amended) A method as defined in Claim ~~1~~11 wherein said object is a miniature surface mount component.

3. (Currently Amended) A method as defined in Claim ~~1~~11 wherein offline modeling comprises:

receiving reference data for objects corresponding to the object type; and

providing a model for the object type in correspondence with the received reference data.

4. (Original) A method as defined in Claim 3 wherein the received reference data comprises computer aided design parameters for objects corresponding to the object type.

5. (Original) A method as defined in Claim 3 wherein the provided model comprises a polygonal shape.

6. (Canceled)

7. (Currently Amended) A method as defined in Claim 6-11 wherein the received image comprises an object located on a simple image background.

8. (Canceled)

9. (Currently Amended) A method as defined in Claim 8-11 wherein localizing comprises estimating the pose of the object, and wherein measuring comprises estimating the dimension of the object.

10. (Canceled)

11. (Currently Amended) An object inspection method comprising:
offline modeling of an object type; and
runtime matching of an object corresponding to the object type;
wherein runtime matching comprises:

receiving an image having an object of the object type;

performing a coarse search for the object; and

performing a refined search for the object;

wherein performing a coarse search comprises localizing the object from the image in accordance with a model;

wherein performing a refined search comprises measuring the localized object;

wherein localizing comprises:

iteratively segmenting the object; and

applying a moment transformation to the segmented object; and

~~A method as defined in Claim 10~~ wherein iteratively segmenting the object comprises:

selecting an initial estimate of a threshold by using the average gray-level of the $2n$ brightest pixels in the image, where n is the size of the model;

segmenting the image into a background region and an object region in accordance with the threshold, with the pixels having a gray-level less than the threshold being assigned to the background region and all other pixels being assigned to the object region;

calculating the mean gray-levels within the background and object regions, respectively;

calculating a new threshold in accordance with the calculated mean gray-levels and the number of pixels in each region;

repeating the above steps of segmenting, calculating gray-levels and calculating new thresholds until convergence is reached; and

obtaining the segmented object from the final pixels in the object region.

12. (Currently Amended) A method as defined in Claim 8-11 wherein measuring comprises:

detecting and interpolating edges of the object; and
iteratively optimizing measurement results.

13. (Currently Amended) An object inspection system comprising:

means for modeling an object type; and

means for matching an object corresponding to the object type;

wherein the means for matching comprises:

means for receiving an image having an object of the object type;

means for performing a coarse search for the object; and

means for performing a refined search for the object;

wherein the means for performing a coarse search comprises means for
localizing the object from the image in accordance with a model;

wherein the means for performing a refined search comprises means for
measuring the localized object;

wherein the means for localizing comprises:

means for iteratively segmenting the object; and

means for applying a moment transformation to the segmented
object; and

wherein the means for iteratively segmenting the object comprises:

means for selecting an initial estimate of a threshold by using the average gray-level of the $2n$ brightest pixels in the image, where n is the size of the model;

means for segmenting the image into a background region and an object region in accordance with the threshold, with the pixels having a gray-level less than the threshold being assigned to the background region and all other pixels being assigned to the object region;

means for calculating the mean gray-levels within the background and object regions, respectively;

means for calculating a new threshold in accordance with the calculated mean gray-levels and the number of pixels in each region;

means for repeating the above steps of segmenting, calculating gray-levels and calculating new thresholds until convergence is reached;
and

means for obtaining the segmented object from the final pixels in the object region.

14. (Original) A system as defined in Claim 13 wherein said object is a miniature surface mount component.

15. (Original) A system as defined in Claim 13 wherein the means for modeling comprises:

means for receiving reference data for objects corresponding to the object type; and

means for providing a model for the object type in correspondence with the received reference data;

16. (Canceled)

17. (Canceled)

18. (Currently Amended) A system as defined in Claim ~~17~~13 wherein the means for localizing comprises means for estimating the pose of the object, and wherein the means for measuring comprises means for estimating the dimension of the object.

19. (Canceled)

20. (Currently Amended) A system as defined in Claim ~~17~~13 wherein the means for measuring comprises:

means for detecting and interpolating edges of the object; and

means for iteratively optimizing measurement results.

21-26. (Canceled)